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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,342	01/20/2006	Hideo Nagai	92478-9600	9938
52044 7590 10/30/2007 SNELL & WILMER L.L.P. (Matsushita) 600 ANTON BOULEVARD SUITE 1400 COSTA MESA, CA 92626			EXAMINER LIN, JOHN	
			ART UNIT 2815	PAPER NUMBER
			MAIL DATE 10/30/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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**Office Action Summary**

Application No.

10/565,342

Applicant(s)

NAGAI ET AL.

Examiner

John Lin

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08).  
Paper No(s)/Mail Date 20 January 2006.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 16 and 17 are objected to because of the following informalities: It is unclear as whether claims 16 and 17 are independent claims or dependent claims because claim 16 has dependent limitations from claim 1 and claim 17 has dependent limitations from claim 16. For the purpose of applying art, it will be interpreted as claim 16 is dependent on claim 1 and claim 17 is dependent on claim 16. Appropriate correction is required.
2. Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation "a lighting apparatus comprising a light emitting module claimed in claim 16" does not structurally distinguish over claim 16. Therefore claim 17 does not further limit claim 16.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites, "...a plurality of

second light emitting elements that are mounted on the plurality of pads in a one-to-one correspondence." This limitation is unclear and indefinite because "one-to-one correspondence" is not defined in the specification. Figures 2A and 5 show that LED 8 is mounted on two conductive pads. For the purpose of applying art, the limitation will be interpreted as "one-to-one correspondence" meaning every active layer of a light emitting element is connected to only one pad.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 11, 13 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 6,577,073) in view of Maeda et al. (US 6,468,821).

7. **Claim 1:** Shimizu et al. teach a semiconductor light emitting device in Fig. 17A comprising:

a substrate 115;

a first light emitting member 111; and

a second light emitting member 112 that, the second light emitting member emitting light of a different color from the first light emitting member (column 21, lines 30-36).

But Shimizu et al. does not teach an electrically conductive pattern. However, Shimizu et al. teach LED chips can be flip-chip mounted in order to omit bonding wires (column 7, lines 10-12) and Maeda et al. teach a flip-chip LED 1 mounted on an electrically conductive pattern 25 (Figs. 10(a)-10(d); column 16, line 66 – column 17, line 12). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the first light emitting member and second light emitting member of Shimizu et al. flip-chips in order to make the production process more efficient by omitting bonding wire (as taught by Shimizu et al.) and to have formed the electrically conductive pattern of Maeda et al. on the substrate of Shimizu et al. in order to provide external signals to the light emitting members.

The limitations "...formed on the substrate in an epitaxial growth step of a wafer fabrication process," "...separately formed and then mounted on the electrically conductive pattern," and "formed on the substrate in a wiring step of the wafer fabrication process" are merely product-by-process limitations that does not structurally distinguish the claimed invention over the prior art. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966.

8. **Claim 11:** Shimizu et al. teach the first light emitting member 111 emits blue light, and the second light emitting member 112 emits red light (Fig. 17A; column 21, lines 30-36), and the semiconductor light emitting device further comprises a phosphor 13 that covers the first light emitting member and the second light emitting member, the phosphor converting the blue light into green-yellow light (Fig. 17A; column 11, line 54 – column 12, line 14).

9. **Claims 13 and 14:** Shimizu et al. teach the red light has a peak emission wavelength within a range of 600 nm and 650 nm, the blue light has a peak emission wavelength within a range of 440 nm and 470 nm, and the green-yellow light has a peak emission wavelength within a range of 520 nm and 560 nm. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the red light have a peak emission wavelength within a range of 615 nm and 635 nm and within a range of 620 nm and 630 nm; the blue light have a peak emission wavelength within a range of 450 nm and 470 nm and within a range of 455 nm and 465 nm; and the green-yellow light have a peak emission wavelength within a range of 540 nm and 560 nm and within a range of 545 nm and 555 nm because they overlap the ranges taught by Shimizu et al.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. as applied to claims 1, 11, 13 and 14 above, and further in view of Akutsu et al (US 4,047,069).

11. **Claim 12:** Shimizu et al. in view of Maeda et al. in view of Farrell teach all the limitations of claim 4, but do not teach the phosphor is a silicate phosphor  $(\text{Ba, Sr})_2\text{SiO}_4:\text{Eu}^{2+}$ . However, Akutsu et al. teach barium strontium silicate activated with di-valent europium is suitable for producing green-yellow light. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used barium strontium silicate activated with di-valent europium of Akutsu et al. for the phosphor of Shimizu et al. because it is a suitable phosphor for producing green-yellow light.

12. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. as applied to claims 1, 11, 13 and 14 above, and further in view of Farrell (US 4,857,801).

13. **Claim 2:** Shimizu et al. in view of Maeda et al. teach all the limitations of claims 1, and Maeda et al. further teach the electrically conductive pattern includes a plurality of pads 25 (Fig. 10(b)) and the flip-chip LEDs are mounted on the plurality of pads in a one-to-one correspondence, as defined in the 35

U.S.C. 112 rejection above. But Shimizu et al. in view of Maeda et al. do not teach the first light emitting member includes a plurality of first light emitting elements and the second light emitting member includes a plurality of second light emitting elements. However, Farrell teach an LED array 10 comprising a first light emitting member including a plurality of first light emitting elements 14a and a second light emitting member including a plurality of second light emitting elements 14b (Fig. 4; column 4, lines 6-12). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the first light emitting member and second light emitting member of Shimizu et al. include a plurality of first light emitting elements and a plurality of second light emitting elements in a matrix as taught by Farrell in order to increase light output.

14. **Claim 3:** Farrell teaches the plurality of first light emitting elements and the plurality of second light emitting elements are arranged in a matrix on the substrate, in such a manner that every light emitting element adjacent to a second light emitting element in row and column directions is a first light emitting element (Fig. 4).

15. **Claim 4:** Shimizu et al. in view of Farrell teach the first light emitting member 111 emits blue light, and the second light emitting member 112 emits red light (Shimizu et al.: Fig. 17A; column 21, lines 30-36), and the semiconductor light emitting device further comprises a phosphor 13 that covers a plurality of red LEDs and a plurality of blue LEDs, the phosphor converting the



blue light emitted by the plurality of blue LEDs into green-yellow light (Shimizu et al.: Fig. 17A; column 11, line 54 – column 12, line 14).

16. **Claims 5 and 6:** Shimizu et al. teach the red light has a peak emission wavelength within a range of 600 nm and 650 nm, the blue light has a peak emission wavelength within a range of 440 nm and 470 nm, and the green-yellow light has a peak emission wavelength within a range of 520 nm and 560 nm. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the red light have a peak emission wavelength within a range of 615 nm and 635 nm and within a range of 620 nm and 630 nm; the blue light have a peak emission wavelength within a range of 450 nm and 470 nm and within a range of 455 nm and 465 nm; and the green-yellow light have a peak emission wavelength within a range of 540 nm and 560 nm and within a range of 545 nm and 555 nm because they overlap the ranges taught by Shimizu et al.

17. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. in view of Farrell as applied to claims 2-6 above, and further in view of Akutsu et al.

18. **Claim 7:** Shimizu et al. in view of Maeda et al. in view of Farrell teach all the limitations of claim 4, but do not teach the phosphor is a silicate phosphor

(Ba, Sr) $2\text{SiO}_4\text{:Eu}^{2+}$ . However, Akutsu et al. teach barium strontium silicate activated with di-valent europium is suitable for producing green-yellow light. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used barium strontium silicate activated with di-valent europium of Akutsu et al. for the phosphor of Shimizu et al. because it is a suitable phosphor for producing green-yellow light.

19. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. in view of Farrell as applied to claims 2-6 above, and further in view of Slater, Jr. et al. (US 6,740,906).

20. **Claim 8:** Shimizu et al. in view of Maeda et al. in view of Farrell teach all the limitations of claim 4, but do not teach the substrate is made of one of SiC and AlN materials. However, Slater, Jr. et al. teach silicon carbide and aluminum nitride are suitable materials for a LEDs (column 8, lines 9-12). The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the substrate of Shimizu et al. of SiC or AlN because it is a suitable material for a substrate for LEDs.

21. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. in view of Farrell as applied to claim 2-6 above, and further in view of Matsuoka et al. (US 6,927,426).

22. **Claim 9:** Shimizu et al. in view of Maeda et al. in view of Farrell teach all the limitations of claim 2, but do not teach a wiring pattern that is formed on the substrate in the wiring step of the wafer fabrication process, the wiring pattern electrically connecting the plurality of first light emitting elements and the plurality of second light emitting elements together. However, Matsuoka et al. teach a wiring pattern 1311 formed on a substrate 1301, the wiring pattern electrically connecting three LEDs (Fig. 13; column 24, line 55 – column 25, line 4 and column 25, lines 30-39). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the wiring layer of Matsuoka et al. on the plurality of first light emitting elements and the plurality of second light emitting elements of Shimizu et al. in view of Maeda et al. in view of Farrell in order to connect the matrix of light emitting elements to signals to control the light emitting elements. The limitation "...in the wiring step of the wafer fabrication process" is merely a product-by-process limitation that does not structurally distinguish the claimed invention over the prior art. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966.

23. **Claim 10:** Matsuoka et al. teach the wiring pattern connects the plurality of first light emitting elements and the plurality of second light emitting elements are connected together (Fig. 13) and Shimizu et al. teach the first light emitting elements and the plurality of second light emitting elements are connected in series (column 7, lines 55-59).

24. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. as applied to claims 1, 11, 13 and 14 above, and further in view of Marshall et al. (US 6,692,136).

25. **Claim 15:** Shimizu et al. in view of Maeda et al. teach all the limitations of claim 1, but do not teach a third light emitting member that is mounted on the substrate, the third light emitting member emitting light of a different color from the first light emitting member and the second light emitting member. However, Marshall et al. teach having three light emitting members which all emit different colors allows maximum lumen content while permitting the color temperature to be freely adjusted (column 3, lines 45-67). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a third light emitting member (as taught by Marshall et al.) of a different color from the first light emitting member and the second light emitting member of Shimizu et al., and mounted on the substrate of Shimizu et al. in order to provide maximum lumen content while permitting the color temperature to be freely adjusted.

26. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. in view of Maeda et al. as applied to claims 1, 11, 13 and 14 above, and further in view of Wu (US 6,502,956).

27. **Claims 16 and 17:** Shimizu et al. in view of Maeda et al. teach all the limitations of claim 1, but do not teach a light emitting module comprising the light emitting device mounted on a printed-wiring board. However, Wu teaches an LED lamp comprising plurality of LEDs 14 are mounted on a PCB 10 (Fig. 1A and 7; column 3, lines 46-53). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have mounted the semiconductor light emitting device of Shimizu et al. in view of Maeda et al. on a PCB of an LED lamp in order to provide consumer applicability.

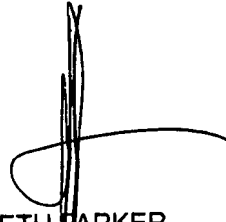
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Lin whose telephone number is 571-270-1274. The examiner can normally be reached on M-F, 8AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Lin

A handwritten signature in black ink, appearing to read 'K. Parker', with a large loop at the end.

KENNETH PARKER  
SUPERVISORY PATENT EXAMINER